

**CLAIMS:**

1. A novel population of lymphocytes which express intracellularly a protein or polypeptide which binds to an antibody being a member of the  
5 group consisting of:

- (i) anti MO2 MAbs;
- (ii) fragments of the antibodies of (i) above which essentially retain the antigen binding characteristics of the non fragmented anti MO2 MAb;
- (iii) antibodies which bind to the antigenic epitope bound by any  
10 one of the antibodies of (i) or (ii) above;

said lymphocytes having no expression of the MO2 antigen on their surface.

2. A population of lymphocytes in accordance with Claim 1, wherein said lymphocytes further express the CD3 antigen on their cell surface.

15 3. A population of lymphocytes in accordance with Claim 2, wherein said lymphocytes further express the CD8 antigen on their cell surface.

4. A population of lymphocytes in accordance with Claim 2, wherein said lymphocytes further express the CD4 antigen on their cell surface.

5. A population of lymphocytes in accordance with Claim 2, wherein said  
20 lymphocytes further express the gamma/delta receptor.

6. A population of lymphocytes in accordance with Claim 1, wherein said lymphocytes have no expression of the CD3 and CD22 antigens on their cell surface.

7. A population of lymphocytes in accordance with Claim 6, wherein said  
25 lymphocytes express the CD16 antigen on their cell surface.

8. A method for detection of an individual with a high probability of having an infection comprising the steps of:

- (i) obtaining a peripheral blood sample from said individual;
- (ii) separation of mononuclear cells from said peripheral blood;

- (iii) fixation and permeabilization of said mononuclear cells;
- (iv) incubation of said fixed and permeabilized mononuclear cells with MAbs which bind to the MO2 antigen under conditions enabling binding of the Mabs to said antigen;
- 5 (viii) detecting binding of said antibodies in said cells, and determining the number of cells in said sample expressing the MO2 antigen internally and/or the intracellular level of MO2 expression in said cells;
- (ix) calculating a cutoff value based on an average number of MO2<sup>+</sup> cells or average level of MO2 expression in samples obtained from healthy individuals; and
- 10 (x) comparing the number of MO2<sup>+</sup> cells and/or level of expression of MO2 in said cells measured in (v) above to said cutoff value, a measured number of MO2<sup>+</sup> cells and/or level of expression of MO2 in said cells higher than the cutoff value,
- 15 indicating a high probability of the existence of an infection in said tested individual.

9. A method in accordance with Claim 8, wherein following or simultaneously with the incubation of said fixed and permeabilized cells with

20 MAbs which bind MO2, said cells are also incubated with MAbs which bind T-cells specific antigens and the number of MO2<sup>+</sup> cells which also bind said anti-T-cell MAbs in said sample as well as the level of MO2 expression in said cells is determined and compared to the number of cells which bind MO2 and said anti-T-cell specific MAb or the level of MO2 in such cells in control

25 non-infected individuals, a higher number of MO2<sup>+</sup> cells or a higher level of MO2<sup>+</sup> expression in said tested individual indicating a high probability of the existence of an infection in said tested individual.

10. A method in accordance with Claim 9, wherein said anti-T-cell specific antigen is CD8.

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11. A method in accordance with Claim 9, wherein said T-cell specific antigen is CD4.
12. A method in accordance with Claim 9, wherein said T-cell specific antigen is the gamma/delta receptor.
- 5 13. A method for monitoring the efficacy of a treatment in an infected individual comprising:
- (i) obtaining a peripheral blood sample from said individual prior to administration of said treatment;
  - (ii) separation of mononuclear cells from said peripheral blood;
  - 10 (iii) fixation and permeabilization of said mononuclear cells;
  - (iv) incubation of said fixed and permeabilized mononuclear cells with MAbs which bind to the MO2 antigen under conditions enabling binding of the MAbs to said antigen;
  - 15 (v) detecting binding of said antibodies in said cells, and determining the number of cells in said sample expressing the MO2 antibody internally and/or the intracellular level of MO2 expression in said cells;
  - (vi) administering said treatment to the individual;
  - (vii) at various periods of time following said treatment obtaining a peripheral blood sample from said treated individual;
  - 20 (viii) determining the number of cells in said samples expressing the MO2 antigen internally and/or the intercellular level of MO2 expression in said cells as in step (ii) - (v) above;
  - (ix) comparing the number of said cells and/or said level of expression of MO2 in the cells in the sample obtained in (i) to the number of said cells and/or the level of MO2 expression in samples obtained from said individual following treatment, a significantly different number of MO2<sup>+</sup> cells or a significantly different level of expression of MO2 in cells present in samples
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obtained from said treated individual as compared to the number of MO2<sup>+</sup> cells or the level of MO2 expression in cells in a sample obtained prior to said treatment indicating efficacy of the treatment.

- 5 14. A method in accordance with Claim 13, wherein following or simultaneously with incubation of said cells in said (iv) with Mabs which bind the MO2 antigen, the cells are also incubated with antibodies which bind T-cells specific antigens, the number of cells which bind said Mabs is determined before and after said treatment and the number of said cells or the
- 10 level of expression of MO2 in said cells is compared to the number of said cells or the level of MO2 expression in said cells in samples obtained from said individual prior to receiving treatment; a significantly different number of said cells and/or of the level of expression of MO2 in said cells indicating efficacy of said treatment.
- 15 15. A method in accordance with Claim 14, wherein said additional T-cell specific antigen is CD8.
16. A method in accordance with Claim 14, wherein said additional T-cell; specific antigen is CD4.
17. A method in accordance with Claim 14, wherein said additional T-cell
- 20 specific antigen is gamma/delta receptor.
18. A kit comprising antibodies which bind to the MO2 antigen together with reagents necessary for fixation, and permeabilization of the tested cells and, optionally, additional antibodies capable of binding to T-cell antigens and means for detecting said binding of said MABs to the tested cells.
- 25 19. A kit in accordance with Claim 18, further comprising cutoff values to which the measured number of MO2<sup>+</sup> cells and/or level of MO2 expression are compared.
20. A population of lymphocytes in accordance with any one of Claims 1-7, wherein said anti-MO2 MABs are MO2-RD1 MABs, fragments

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